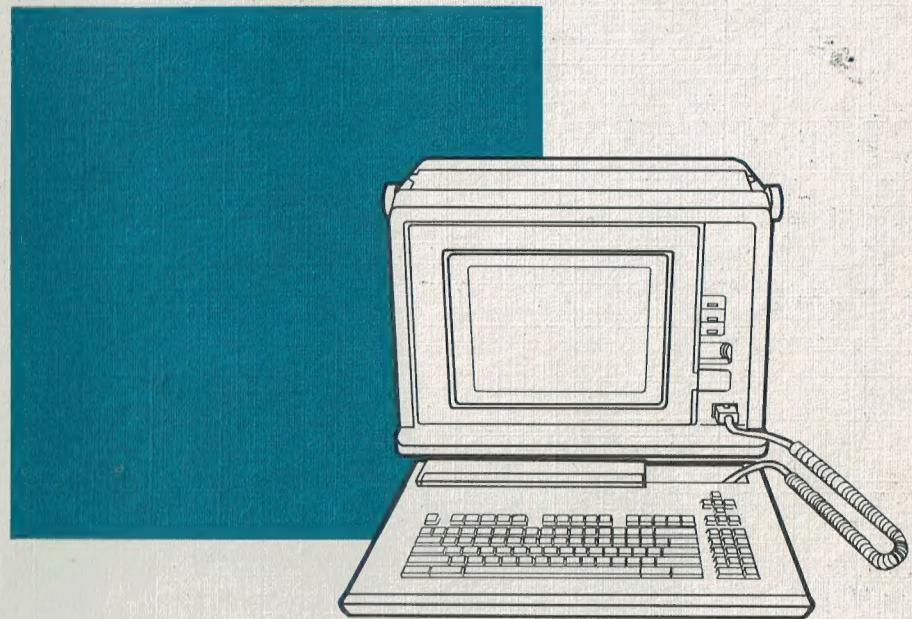


## *PowerMate® Portable SX*

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## **Hardware System Setup Guide**

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**NEC**

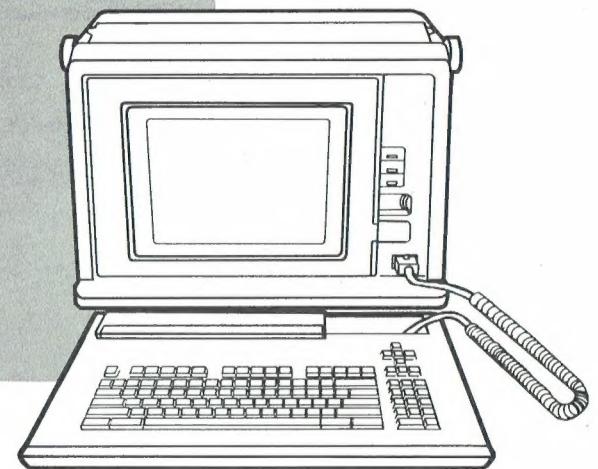
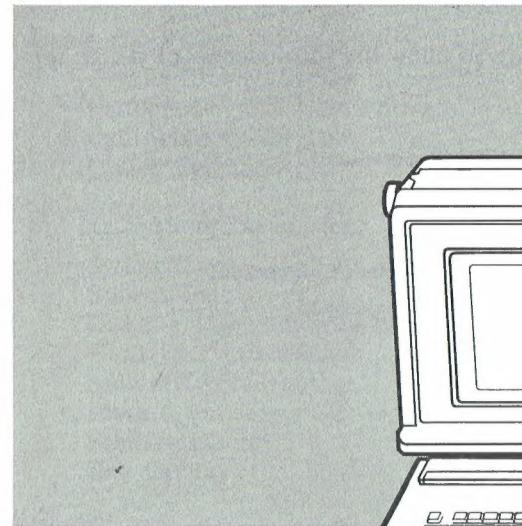
NEC Information Systems, Inc.

819-180129-000 Rev. 00

8-88

*PowerMate® Portable SX*

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**Hardware System  
Setup Guide**

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## Contents

	Page
<b>The System Setup Utility .....</b>	1
<b>Loading the System Setup .....</b>	3
<b>Using the System Setup Utility .....</b>	5
Display/Change System Parameters .....	5
Perform Physical Disk Format .....	5
Exit Setup Utility .....	6
Option Selection .....	6
<b>Setting System Parameters .....</b>	9
System Time .....	12
System Date .....	12
Diskette Drive Information .....	13
Hard Disk Information .....	14
Memory Configuration .....	17
Math Coprocessor Status .....	18
Primary Display .....	19
Exit Option .....	20
<b>Physical Formatting of the Hard Disk .....</b>	23
Specify Bad Tracks .....	24
Perform Physical Format .....	26

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# The System Setup Utility

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The Hardware System Setup diskette included in your system unit package contains the software needed to boot up and prepare your system. You must run the Setup utility when you set up your PowerMate® Portable SX for the first time, and every time you change your system's configuration.

With the Setup utility, you may do the following.

- Check/set system parameters specified in the permanent memory (CMOS) of the system.
- Perform a physical format on a hard disk.

The system parameters must be set correctly for software, which relies on these parameters, to function properly.

The Setup utility is a stand-alone application; it does not require any operating system software (such as MS-DOS®, OS/2™, or UNIX®) to run. Therefore, when you exit the Setup utility, you must reboot the system to run another program.

When you first turn on your PowerMate Portable SX, the system automatically identifies its hardware components. For example, it determines how much memory is present, whether the system clock/calendar is set, and which communication ports and display boards are installed. This process is called the Power-On Self-Test (POST).

The system compares the hardware it finds with the setup information stored in its permanent memory (CMOS). Any discrepancies must be corrected before you can operate your PowerMate Portable SX. The Setup utility enables you to correct the information in permanent memory.

During the Setup process you may perform any of the following tasks.

- Set the system clock to the correct time.
- Set the system calendar to the correct date.
- Tell the system the quantity and type of diskette drives installed.
- Tell the system the quantity and type of hard (fixed) disk drives installed.

- Set the memory information to agree with the amount of memory installed in the system.
- Tell the system the type of display boards installed, and set one for use as the primary display board.
- Check information concerning the configuration of the communication ports, printer ports, etc.

The Setup utility also enables you to perform a physical format of your hard disk(s).

Preparing a hard disk for use involves three steps:

1. physical formatting
2. partitioning
3. operating system formatting

Physical formatting sets the size and location of disk tracks and the sectors in each track. Bad tracks are marked to prohibit their use. Physical formatting must be performed before you can partition and format your hard disk for a particular operating system.

Partitioning divides the disk space into separately accessible sections that can be used by one or more operating systems. You must partition your hard disk, even if it will have only one partition, in order to specify a particular operating system for that partition.

Operating system formatting organizes the disk, as required by a particular operating system, and places information (such as a bootup program and system files) on the disk.

The Setup utility performs only the physical formatting of a hard disk. Partitioning and operating system formatting must be performed with the partitioning and formatting utilities included with your operating system. Refer to the documentation that comes with your operating system to perform these operations.

## Loading the System Setup

---

To load the Setup utility, follow these steps:

1. Make sure all options (such as drives, display controller boards, memory options, and math coprocessors) have been installed.
2. Boot (start up) your PowerMate Portable SX using the Setup diskette. (Refer to the *PowerMate Portable SX Owner's Guide* for information on how to start up your system and load a diskette.)

The system performs a Power-On Self-Test to check the accuracy of setup information stored in its permanent memory.

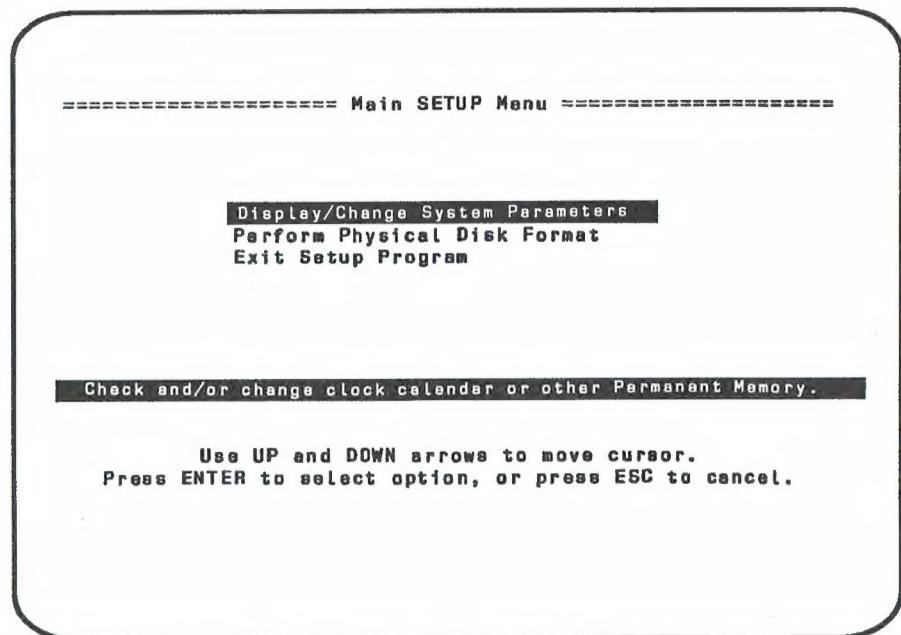
If no discrepancies are found during the Power-On Self-Test, the Main Setup menu appears automatically.

3. If discrepancies are found during the Power-On Self-Test, the following message is displayed:

Invalid configuration information – please run Setup program.  
Strike F1 key to continue.

Press the **F1** key and the system will continue to boot.

After the system boots, it automatically starts the Setup utility, and the Main Setup menu appears as shown on the following screen.



4. To use the Setup utility, proceed to the next section, "Using the System Setup Utility."

## Using the System Setup Utility

The Main Setup menu appears on your screen when you begin using the Setup utility. At the Main Setup menu, you can select the following options:

- Display/Change System Parameters
- Perform Physical Disk Format
- Exit Setup Program.

These options are described below.

### DISPLAY/CHANGE SYSTEM PARAMETERS

This option provides a menu that lets you check and modify setup information contained in the PowerMate Portable SX permanent memory. It is used to inform the PowerMate Portable SX user about the options that are installed in the computer and to set the system parameters, such as the system clock and calendar.

You must select the Display/Change System Parameters option under any of the following conditions.

- You are setting up the PowerMate Portable SX for the first time. Be sure to set the correct time and date.
- The "Invalid Configuration Information" message appears on your power-on screen.
- Whenever you change the system configuration by adding or removing an option.

This option is explained in the section, "Setting System Parameters."

### PERFORM PHYSICAL DISK FORMAT

This option provides a menu that lets you specify any bad tracks on your hard disk(s) and perform physical hard disk formatting. You must select the Perform Physical Disk Format option if any of the following conditions exist.

- The hard disk is new and has never had a physical format performed on it.

- You do not know whether the hard disk has ever been formatted, and the disk does not contain any data or programs that you want to preserve.
- The hard disk has been formatted by some other program, or on some other kind of computer (i.e., not an NEC PowerMate Portable SX), and you want to use it with your PowerMate Portable SX.
- The hard disk develops a bad spot, causing retries or data loss during operation.

For information regarding this option, see the section "Physical Formatting of the Hard Disk."

#### EXIT SETUP PROGRAM

This option enables you to exit the Setup utility. The Setup utility is a stand-alone application, which means that you must reboot the system when exiting in order to run other software. When you select this option, the following message is displayed:

##### Exiting Setup

If there is no operating system installed on the hard disk, insert your operating system installation diskette in drive A.

Press any key to reboot the system.

If an operating system is installed on the hard disk, be sure to remove the Setup utility diskette from drive A before rebooting.

#### OPTION SELECTION

The Setup utility contains a Main Setup menu and a series of submenus. In each of the menus, available options are listed near the middle of the screen, with one option highlighted. The selection process is basically the same for all menus.

To select an option, use these steps:

1. Press the up or down arrow to move the highlighted cursor to another choice.
2. When the highlighted cursor is positioned on the desired selection, press **Enter**.

The Setup utility proceeds with the operation you select.

As specific choices are highlighted in each menu, a line of descriptive text appears near the bottom of the screen. This text describes the specific action that will occur for the highlighted selection.

You can return from each submenu to the preceding menu by moving the highlighted cursor to the **Return to Previous Menu** option and pressing **Enter**. You can also return to the previous menu by pressing **Esc**.

# Setting System Parameters

When you select the Display/Change System Parameters option from the Main Setup menu, a screen similar to the following appears.

===== SYSTEM PARAMETERS =====

TIME:	08:17:02
DATE:	7/20/1988
DISKETTE DRIVE A:	1.44 MByte (3 1/2")
DISKETTE DRIVE B:	Not Installed
HARD DISK 1:	Type 45 - NEC 42 Mb
HARD DISK 2:	Not Installed
BASE MEMORY:	640K
EXTENDED MEMORY:	1024K
MATH CO-PROCESSOR:	Not Installed
PRIMARY DISPLAY:	AGP+, VGB, or Other Graphics Board

**CHANGE SYSTEM PARAMETERS**  
DISPLAY SYSTEM BOARD SWITCH SETTINGS  
RETURN TO PREVIOUS MENU

**Change the current settings of the System Parameters.**

Use UP and DOWN arrows to move cursor.  
Press ENTER to select option, or press ESC to cancel.

This screen displays the system parameters that are stored in permanent battery-backed memory (CMOS). These are the parameters that you can change with this program.

One of the options on this screen, Display System Board Switch Settings, displays the current settings of the system switches, as shown in the following sample screen.

## ===== SYSTEM BOARD SWITCH SETTINGS =====

SYSTEM NAME:	PowerMate Portable SX
PROCESSOR SPEED:	8 MHz
PARALLEL PORT STATUS:	Enabled
SERIAL PORT COM1:	Enabled
SERIAL PORT COM2:	Disabled
VIDEO BIOS SHADOWING:	Enabled
SYSTEM BIOS SHADOWING:	Enabled

Press ENTER to return to previous menu.

When enabled, the System and Video BIOS Shadowing switch options allow the selected ROM BIOS to be copied into RAM at boot time. These functions improve the performance of your PowerMate Portable SX. The Video BIOS Shadow option should only be enabled for certain types of display boards. The PowerMate Portable SX internal video hardware, NEC AGB, AGB Plus, and VGB display boards all support the use of the Video BIOS Shadow option. In addition, NEC AGB-compatible boards can use this option. For display boards without a separate ROM BIOS (such as the NEC CGB), or other boards not listed here, leave the Video BIOS Shadowing switch set to the default setting (disabled).

To change Video or System switches, consult your NEC dealer. For all other switches, see the *PowerMate Portable SX Owner's Guide*.

With the Change System Parameters option, you can

- choose to change any or all values of the system parameters, or
- accept any or all values as they appear.

To indicate that all values are correct and return to the previous menu, press **Esc** or select the Return to Main Setup Menu option.

If you are setting up your system for the first time, or if you need to change any values, select the Display/Change System Parameters option. Instructions for updating the system parameters will appear as shown in the following screen.

## ===== SYSTEM PARAMETERS =====

TIME:	08:17:02
DATE:	7/20/1988
DISKETTE DRIVE A:	1.44 MByte (3 1/2")
DISKETTE DRIVE B:	Not Installed
HARD DISK 1:	Type 45 - NEC 42 Mb
HARD DISK 2:	Not Installed
BASE MEMORY:	640K
EXTENDED MEMORY:	1024K
MATH CO-PROCESSOR:	Not Installed
PRIMARY DISPLAY:	AGB+, VGB, or Other Graphics Board
EXIT	

**Change the Time set on the System Clock.**

Use UP and DOWN arrows to move cursor.  
Press ENTER to select option, or press ESC to cancel.

The Time selection is highlighted initially, indicating the location of the cursor. You can move the cursor to various system parameters by pressing either the up arrow or the down arrow.

To change an item that is currently highlighted, press **Enter**. The cursor moves to the lower part of the screen where additional instructions for modifying that parameter are displayed. (The following sections provide instructions for modifying any of the system parameters.)

When all the system parameters are correct, select the Exit option at the bottom of the menu. Refer to the subsection "EXIT OPTION."

**SYSTEM TIME**

To change the time on the system clock, move the cursor to the TIME selection and press **Enter**.

The syntax for TIME is

hh:mm [am/pm]

where hh is the hour

mm is the minute

am indicates morning (12-hour format)

pm indicates afternoon (12-hour format).

The Setup utility uses a 24-hour format. For example, 1:00 pm is shown as 13:00. However, you can enter the time in either a 12-hour format (1:00 pm) or 24-hour format (13:00).

Press **Enter** to enter the new time or press **Esc** to leave the time unchanged.

**SYSTEM DATE**

To change the system date, move the cursor to the word DATE and press **Enter**.

The syntax for entering the DATE is

mm/dd/yyyy

where mm is the month

dd is the day

yyyy is the year

/ separates the month, day, and year entries.

For example, July 24, 1988 is entered as 07/24/1988.

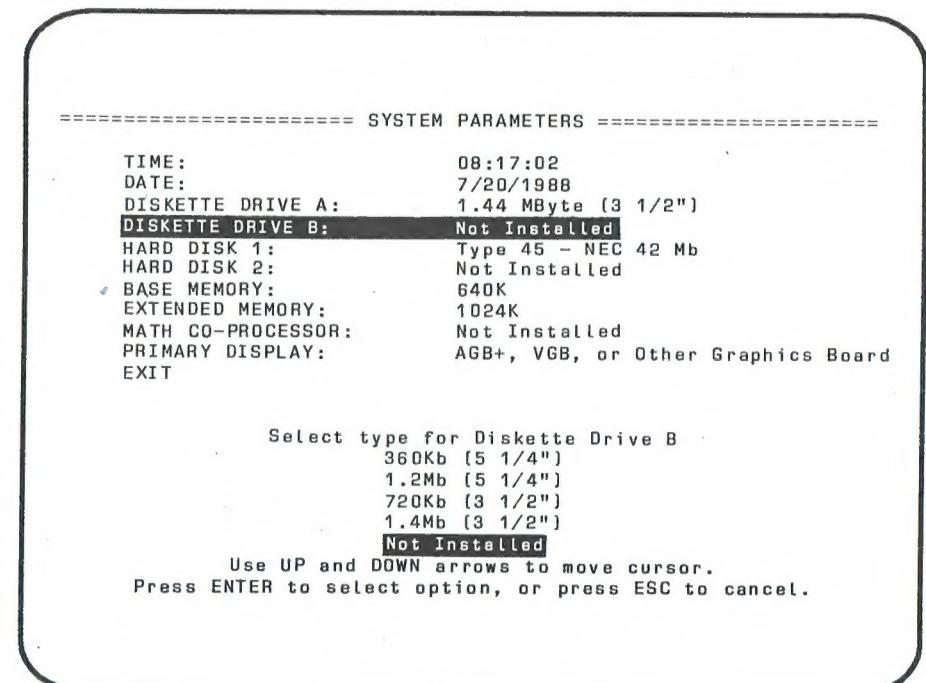
Press **Enter** to accept the new date you entered, or press **Esc** to leave the date unchanged.

**DISKETTE DRIVE INFORMATION**

Diskette drive options for the PowerMate Portable SX are

- external 360 KB (5 1/4-inch double-sided)
- external 1.2 MB (5 1/4-inch high-capacity)
- 720 KB (3 1/2-inch double-sided)
- 1.44 MB (3 1/2-inch high-capacity)

When you choose either the Diskette Drive A or Diskette Drive B parameter, a submenu with drive options appears at the lower part of the screen as shown in the following example.



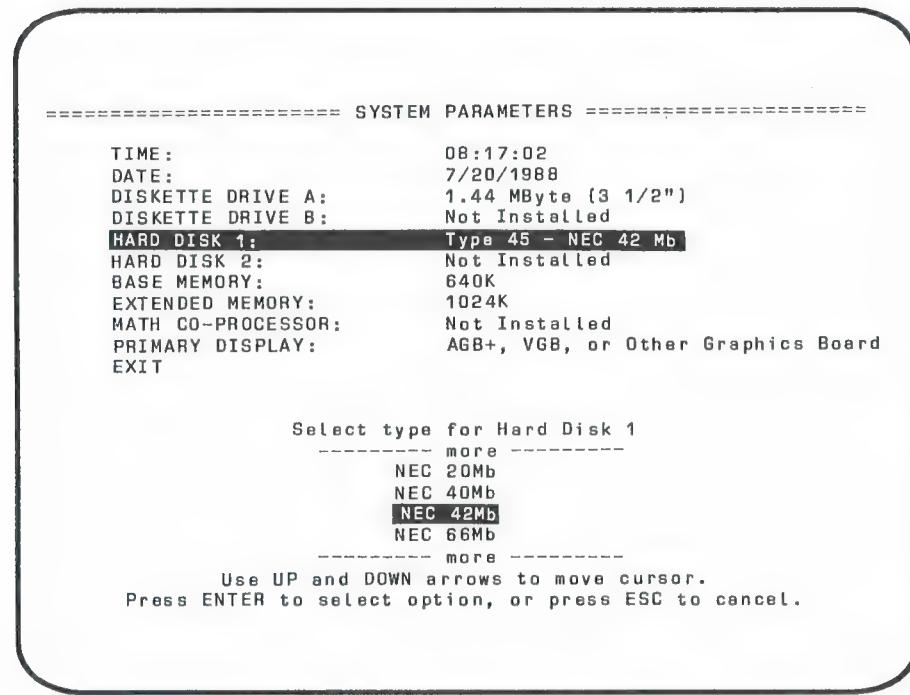
The Diskette Drive A parameter for the standard PowerMate Portable SX configuration is 1.44 MB. Do not change this setting.

If diskette drive B (external drive) is not installed in your PowerMate Portable SX, you must indicate this by selecting the Not Installed option.

**HARD DISK INFORMATION**

The PowerMate Portable SX contains one hard disk drive. The hard disk supplied by NEC is the 42-MB drive.

If you select the Hard Disk parameter from the System Parameters menu, NEC drive options appear at the lower part of the screen as shown in the following example.

**NOTE**

Although other NEC drives appear in the Hard Disk Type menu, the PowerMate Portable SX is shipped with only the 42-MB drive.

To change the Hard Disk parameter, move the highlighting cursor to the appropriate selection. Note that only four hard disk options are displayed at one time. The symbol —more— at the top or bottom of the list means that additional options can be scrolled into view by pressing the up or down arrow. Press **Enter** to accept your selection, or press **Esc** to cancel, leaving the setting unchanged.

If your hard disk drive is not the standard 42-MB drive supplied by NEC, select the Other option from the menu and enter the hard disk type number. You can determine this number for your particular drive by using the information in the table "Hard Disk Type Numbers."

The following table provides a hard disk type number based on the following parameters:

<b>Cylinders:</b>	The number of cylinders on the disk.
<b>Heads:</b>	The number of read/write heads in the drive.
<b>Precomp:</b>	The pre-compensation cylinder number.
<b>Land Zone:</b>	The cylinder number designating the safe landing zone for the drive head(s) when the heads are parked or retracted.
<b>Sector:</b>	The number of sectors per track.
<b>Size:</b>	Total unformatted disk capacity in megabytes.

**Hard Disk Type Numbers**

Type	Cylinders	Heads	Pre-Comp	Land Zone	Sectors	Size (MB)
1	306	4	128	305	17	10.1
2	615	4	300	615	17	20.4
3	615	6	300	615	17	30.6
4	940	8	512	940	17	62.4
5	940	6	512	940	17	46.8
6	615	4	-1	615	17	20.4
7	462	8	256	511	17	30.6
8	733	5	-1	733	17	30.4
9	900	15	-1	901	17	112.0
10	820	3	-1	820	17	20.4

**Hard Disk Type Numbers (cont'd)**

Type	Cylinders	Heads	Pre-Comp	Land Zone	Sectors	Size (MB)
11	855	5	-1	855	17	35.4
12	855	7	-1	855	17	49.6
13	306	8	128	319	17	20.3
14	733	7	-1	733	17	42.5
16	612	4	0	663	17	20.3
17	977	5	300	977	17	40.5
18	977	7	-1	977	17	56.7
19	1024	7	512	1023	17	59.5
20	733	5	300	732	17	30.4
21	733	7	300	732	17	42.5
22	733	5	300	733	17	30.4
23	306	4	0	336	17	10.1
24	286	16	-1	-1	63	140.7
25	615	4	0	615	17	20.4
26	1024	4	-1	1023	17	34.0
27	1024	5	-1	1023	17	42.5
28	1024	8	-1	1023	17	68.0
29	512	8	256	512	17	34.0
30	615	2	615	615	17	10.2
31	823	6	-1	823	34	81.9
32	1020	15	-1	1024	17	127.0
33	611	16	-1	-1	63	300.7
34	823	10	-1	823	34	136.6
35	1024	9	1024	1024	17	76.5
36	1024	5	512	1024	17	42.5
37	830	10	-1	830	17	68.8
38	823	10	256	824	17	68.3
39	615	4	128	664	17	20.4
40	615	8	128	664	17	40.8
41	917	15	-1	918	17	114.1
42	1023	15	-1	1024	17	127.3
43	823	10	512	823	17	68.3
44	820	6	-1	820	17	40.8
45	642	8	256	664	17	42.6
46	925	9	-1	925	17	69.1
47	699	7	256	700	17	40.6

NEC 42 MB — Type 45

Locate your specific hard disk type by matching its characteristics with those in the table. Enter the corresponding type number at the prompt for the hard disk type number.

For example, to specify a hard disk drive of type 3:

1. Select the Other option.
2. Type 3 when the prompt appears.
3. Press **Enter**.

**MEMORY CONFIGURATION**

The PowerMate Portable SX has a minimum of 2 megabytes (MB) of system memory. However, the base system memory should be entered as 640 KB. See the Power-On Self-Test screen for the amount of extended memory installed in your system. Note that 384 KB is reserved for system use.

The PowerMate Portable SX supports extended memory ranging from 0 to 15 MB (15,104 KB).

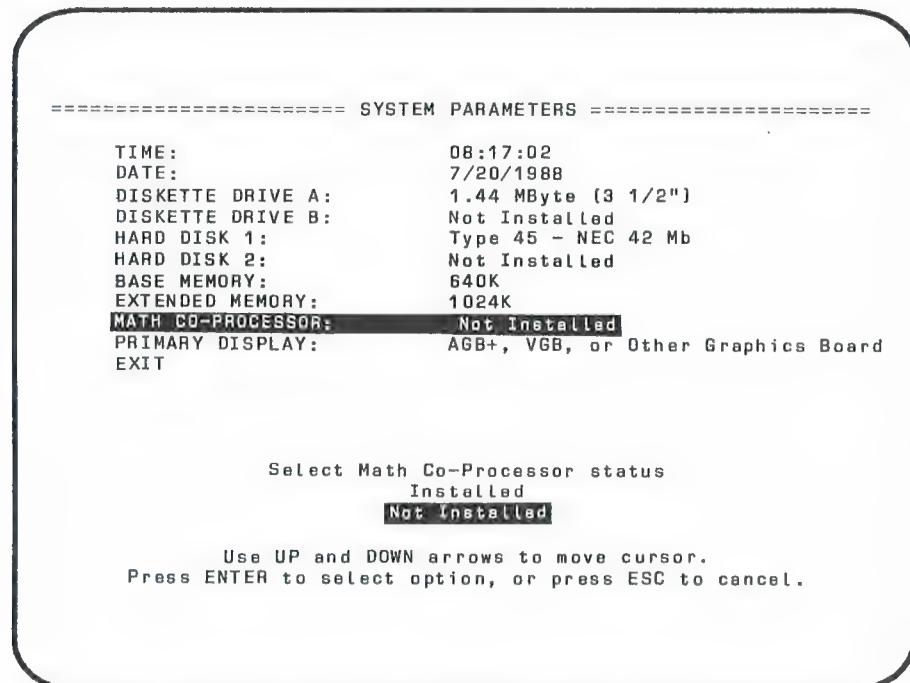
After selecting the Extended Memory option from the System Parameters menu, you are prompted to enter the amount of extended memory (in kilobytes) installed in your system. For example, if you have one megabyte of extended memory, enter 1024.

**NOTE**

The Power-on screen displays the amount of extended memory installed in the Power-Mate Portable SX. If you installed additional memory, enter this amount for the extended memory parameter.

**MATH COPROCESSOR STATUS**

The setting for this parameter indicates whether an Intel® 80387SX math coprocessor is installed in your system unit. After you select the Math Coprocessor option from the System Parameters menu, the following screen appears.



To make the selection appropriate for your system, follow these steps.

1. Move the cursor to the appropriate response for your system configuration — Installed or Not Installed.
2. Press **Enter** to accept your selection; press **Esc** to leave the option unchanged.

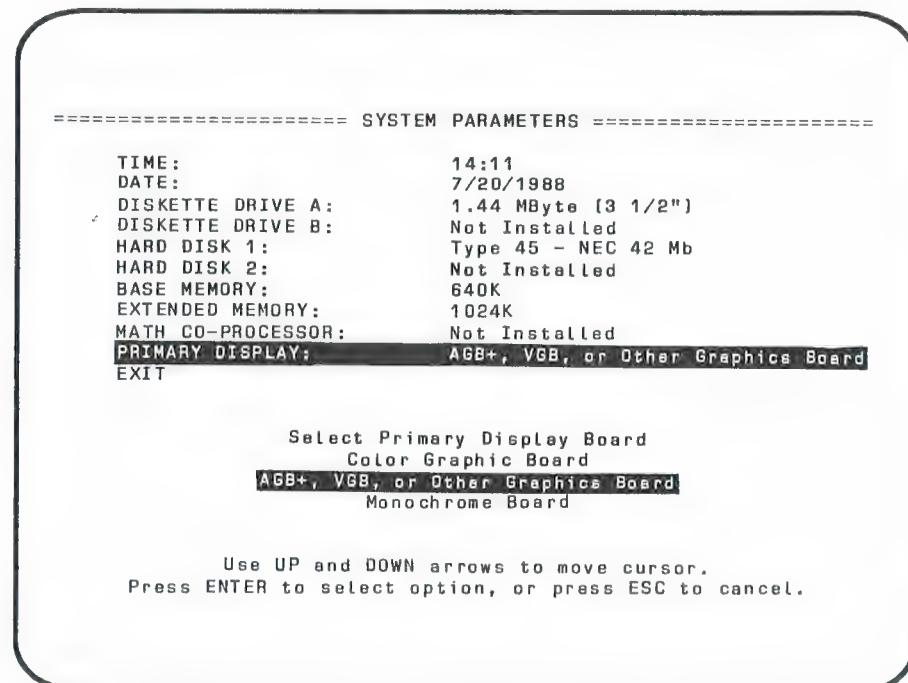
**PRIMARY DISPLAY**

When you select this option, you are prompted to confirm the Primary Display setting. This setting is determined by a DIP switch located on the system mother board. This switch is described in your *PowerMate Portable SX Owner's Guide* (refer to the section on system board switch settings).

If the primary display is connected to the Color Graphics Board (CGB), you can select either a 40- or 80-column display mode.

**NOTE**

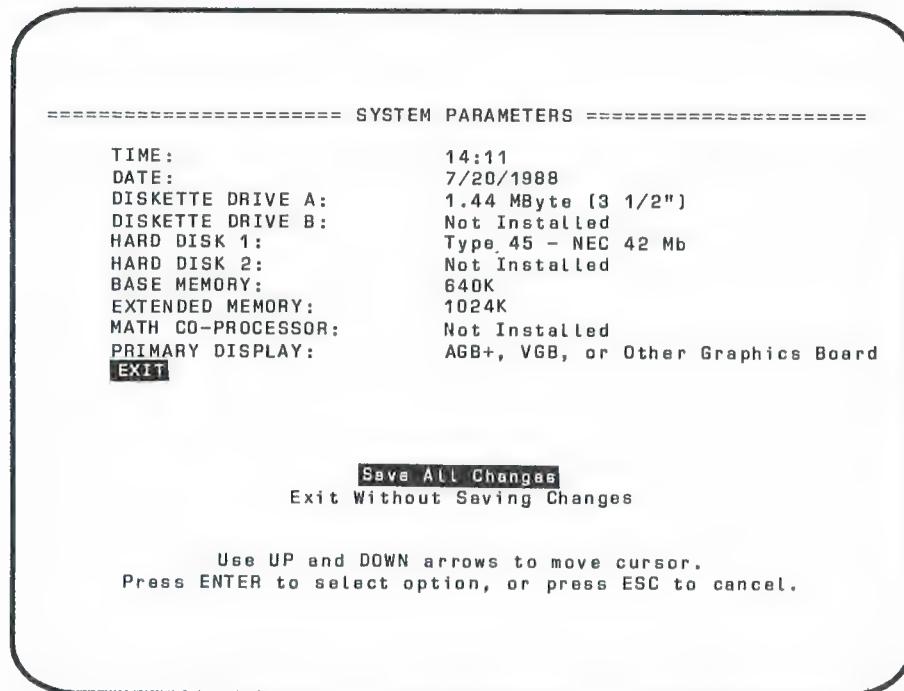
The primary display selection for the PowerMate Portable SX internal display hardware is "AGB+, VGB, or Other Graphics Board."



Move the highlighted cursor to the correct selection. Press **Enter** to change the option from its current setting. Or press **Esc** to leave the setting unchanged.

**EXIT OPTION**

After you have correctly set all system parameters, select the Exit option. If you changed any of the parameters, the system displays the following screen.



If you select the Save All Changes option the following message is displayed:

The System Parameters have been set.  
Press any key to reboot the system.

To exit the Setup program, remove the Hardware System Setup diskette. Then reboot from either your hard drive (if the operating system is already installed) or drive A (with the operating system diskette inserted).

If you need to perform physical formatting of your hard disk or wish to view the new system parameters, leave the Hardware System Setup diskette in your diskette drive. When you reboot, the Main Setup menu appears. The new system parameters are set in permanent memory.

If your screen displays the Invalid Configuration message, the system parameters are set incorrectly. With the Setup diskette inserted, press **F1** to display the Main Setup menu. Select the Display/Change System Parameters option and correct the configuration information.

If you select the Exit Without Saving Changes option, you are returned to the System Parameters menu, and all of the original system parameters and option settings are displayed.

## **Physical Formatting of the Hard Disk**

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The Physical Hard Disk Format procedure prepares a hard disk for subsequent operating system partitioning and formatting. The physical formatting of the PowerMate Portable SX hard disk has been performed at the factory. Therefore, physical formatting is not necessary for system preparation.

However, physical formatting should be performed if one or more of the following conditions exist:

- The hard disk is new and has never had a physical format performed on it.
- You do not know whether the hard disk has ever been formatted, and the disk does not contain any data or programs that you want to preserve.
- The hard disk has been formatted by some other program, or on some other kind of computer (i.e., not an NEC PowerMate Portable SX), and you want to use it with your PowerMate Portable SX.
- The hard disk develops a bad spot, causing retries or data loss during operation.

### **CAUTION**

Physical Hard Disk Format destroys all data on the disk being formatted. Data cannot be recovered, even by data recovery programs designed to "undo" formatting or file deletion.

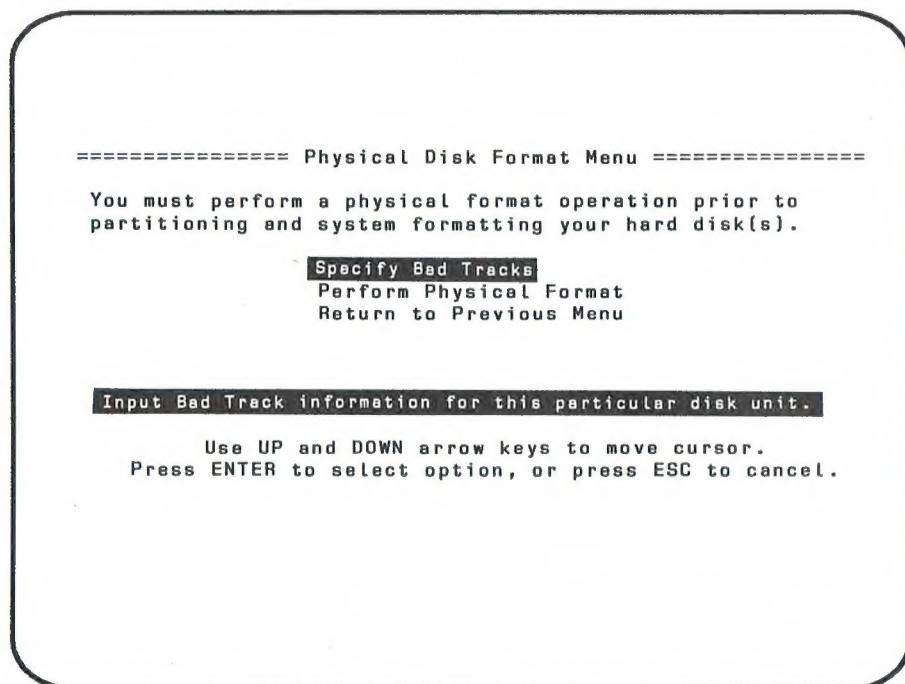
Be sure to back up all valuable data onto diskettes or other media before performing a physical format of your hard disk.

To perform the physical formatting procedure, you need the bad track information that appears either on top of the drive or on a Media Defect List attached to the drive.

**CAUTION**

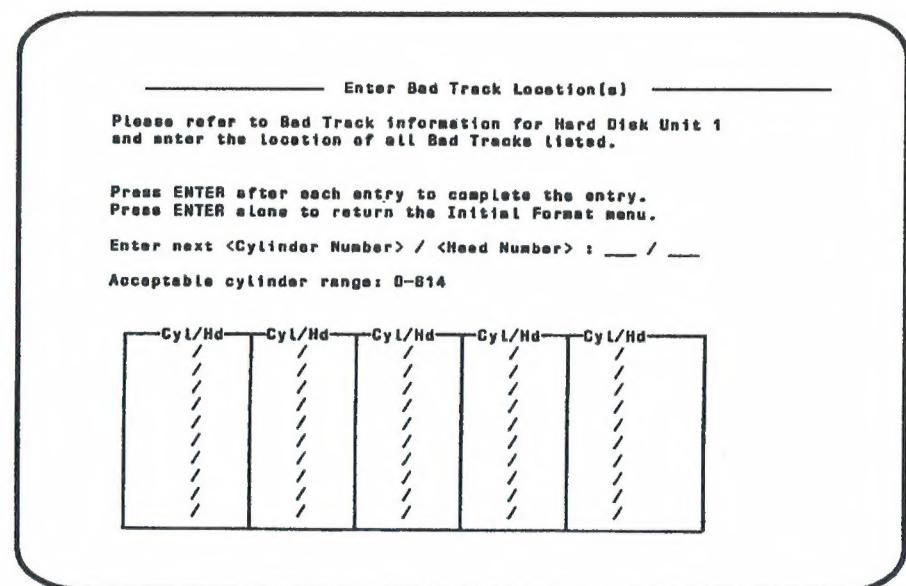
Disk removal should be performed only by an authorized NEC technician or dealer.

To format a hard disk, select the Perform Physical Disk Format option from the Main Setup menu. The following screen is displayed.

**SPECIFY BAD TRACK**

This option provides the Physical Disk Format program with the bad track information for your hard disk. The Format program uses this information to mark and prevent the use of bad tracks. You must provide this information as input to the Physical Disk Format program so that it can mark the bad tracks to prevent their use.

Included with each hard disk is a list of any and all bad tracks on that disk. Check the list of bad tracks to see if your disk has any bad tracks to enter. If there are one or more bad tracks listed, select the Specify Bad Tracks option. The following screen is displayed.



Near the top of the screen a prompt is displayed. You are asked to enter the location of each bad track from the list. Carefully enter the cylinder and head values as they appear on the Media Defect List or in your drive (byte information is not necessary).

The following shows the entry of two lines from a sample Media Defect List:

CYLINDER	HEAD	BYTE
;0158(009E)	09(09)	006724(1A4A)
;0461(01CD)	02(02)	006529(1981)

- For ";0158(009E) 09(09) 006724(1A4A)", the entry is **158/09**.
- For ";0461(01CD) 02(02) 006529(1981)", the entry is **461/02**.

If all the bad tracks entered cannot be displayed, use the cursor keys to scroll the list up and down.

When you enter a bad track, its location is added to the bad-track chart displayed near the bottom of the screen, and you are prompted to enter the location of the next bad track.

## Physical Formatting of the Hard Disk

When you have entered *all* of the hard disk's bad tracks, press **Enter** without entering a location; this will return you to the Hard Disk Physical Format menu.

If you discover that you have entered an incorrect value, you must return to the Hard Disk Physical Format menu and reselect the Specify Bad Tracks option. You can then reenter the bad track table item-by-item.

## PERFORM PHYSICAL FORMAT

Once you have specified all of the necessary information (disk unit number and bad tracks), you can perform the physical format of the hard disk.

Select the Perform Physical Format option from the menu to begin the physical formatting. You will then be asked to confirm that you want to format the selected hard disk unit. Once you have confirmed the selection, the format process begins. Physical formatting can take anywhere from twenty minutes to one hour, depending on the size of your hard disk.

When the format operation is completed, you are returned to the Hard Disk Physical Format menu. You can then return to the Main Setup menu by selecting the Return to Previous Menu option.

Once you have successfully completed the Hardware System Setup operation, you can go on to the next step — Operating System Setup. Refer to your operating system user's guide.

## USER'S COMMENTS FORM

**Document:** PowerMate® Portable SX Hardware System  
Setup Guide

**Document No.:** 819-180129-000 Rev. 00

Please suggest improvements to this manual.

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Please list any errors in this manual. Specify by page.

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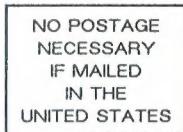
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